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Product Innovation on Customer Satisfaction and Brand Loyalty of Smartphone Users

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Abstract

This study investigates the effect of product innovation attributes (Relative advantage, Complexity, Compatibility, Trialability, and observability) on customer satisfaction and loyalty with experience as a moderator between customer satisfaction and brand loyalty. This study uses quantitative methods, using the help of SPSS 23, and uses a path analysis approach to determine the relationship between variables. Based on a sample of 100 people living in the Labuhan Batu Regency area, it was found that Relative advantage, Complexity, Compatibility, Trialability, and Observability had a positive effect on customer satisfaction. These results also found that the product innovation attribute was a major predictor of customer satisfaction. The results of the study reveal that loyal customers use smartphone services in accordance with and consistent with the given perceptions. In addition, the research results illustrate that customer satisfaction has a significant effect on brand loyalty. Furthermor this study also found that experience significantly moderates customer satisfaction and brand loyalty. Innovation in a product can increase customer satisfaction and make customers commit to a brand. managers need to understand customer needs by creating value accordingly. This study is the first to investigate the relationship between product innovation attributes, customer satisfaction and experience as a moderation. Future research is expected to analyze the role of experience as an independent variable in influencing customer satisfaction and brand loyalty.

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1. Introduction

In the current era of globalization, the emphasis on industrial mobile phones towards innovation in smartphone production is increasing, especially when smartphone production is applied in various types of mobile devices setting the standards that companies apply (Panigrahi et al., 2021). In today's technological developments, especially information technology raises the belief that the future can be controlled by anyone who can master information technology. The increasing need for knowledge and information will further encourage the importance of supporting these technologies in society. Judging from the competitive conditions that occur in smartphone products. The diversity of smartphone products encourage consumers to search in determining a brand that they think meets the ideal criteria for a product. Several brands continue to emerge with various variants: Samsung, Oppo, Vivo, Xiaomi, and Realme. There are some companies that experienced an increase in sales and some experienced a decrease in market share. This can be proven from the results of the Counterpoint survey.

Table 1. Counterpoint smartphone data for the second quarter in the 2019-2020 period

	arter in the 201	- I
Product	Q2 2019	Q2 2020
Vivo	7,8 %	21,2%
Oppo	17,5%	20,6%
Samsung	27,0%	19,6%
Xiaomi	21,9%	17,9%
Realme	7,6%	13,6%
Others	18,3%	7,1%
Total	100%	100%

Source: Kompas.com (2020)

With the various brands that continue to appear on industrial smartphones, this makes smartphone users in Indonesia, especially people in the Labuhan Batu area, have to be more selective in choosing the smartphone product they want to use. The development of applications on smartphone gadgets can have an impact on user behavior. This impact can be felt in social life, direct interaction with one another is rare, smartphone abuse is also common. as well as to

access sites that should not be accessed by the public. always instant or fast and easy and these diverse needs make people more motivated to use smartphones. The involvement of the Labuhan Batu community in the inappropriate use of smartphones is also a growing concern. People often fail to consider the consequences and realize the long-term impact that will be felt from the consequences of using smartphones too often. Therefore an increase in customer trust will lead to the creation of value for the organization (Panigrahi et al., 2021).

Product innovation, has a major impact on people's lives, often with related technological developments. One of the biggest impacts is when people use smartphones for negative things. Product innovation needs to be considered to make the company competitively superior and can attract significant attention (Maulana & Alisha, 2020). Although product innovation does not directly affect brand loyalty. However, after changing customer satisfaction, customer loyalty can be increased. However, it is the product innovation characteristics that attract attention with brand loyalty. To increase market share the company revitalizes its brand through product innovation. To solve this problem, the researcher has many efforts to do. However, the impact of product innovation, customer awareness, and brand loyalty has not been developed intensively.

Customers will consider and adopt product innovation attributes when making purchasing decisions (Panigrahi et al., 2021). The smartphone industry is the backbone of the standard economy of the fastest-growing market segment. Innovation in a smartphone can be openly accepted because of its attractive and unique design features and specifications according to consumer desires (Panigrahi et al., 2021). In addition, personal characteristics such as experience are used as a moderator between customer satisfaction and brand loyalty. An understanding of whether or not there is a relationship between customer experience in Generation Y, known as the millennial generation or millennials. This generation was born in 1980-1995, who are between 25-40 years old who have experience with a product. Experience in brand loyalty is very important in the smartphone industry. Smartphone companies must differentiate customer experience from brand loyalty to take an intensive approach. Therefore, the purpose of this research is to find out:

- 1. How do product innovation attributes affect customer satisfaction?
- 2. Does customer satisfaction affect brand loyalty?
- 3. Does experience moderate customer satisfaction and brand loyalty?

Literature Review

To gain a competitive advantage, brand loyalty is the main focus of strategic marketing. Brand loyalty was investigated and introduced the theory of reasoned action (Panigrahi et al., 2021). The attributes of product innovation, customer satisfaction, and brand loyalty need to be considered, as well as hypotheses developed based on previous studies.

Independent variable: product innovation attributes

Product innovation is any item or product that is considered new that has been developed or modified, thus attracting consumers to buy the product (Dachi, 2020). Product innovation provides a solution to the problem of failure in a product and fulfills customer needs and satisfies them (Panigrahi et al., 2021). Product innovation is also a series of various functional processes that influence to adapt to a dynamic environment. Therefore, companies must find new things or new ideas, new thinking, product innovation also in the form of changes in design, components, and product architecture, in innovative offerings that can improve services and create new products and satisfy customers and can achieve company success (Yusuf, 2021).

1). Relative Advantage

Fauzi Muhammad & Mandala (2019) states that Relative advantage is the characteristic form of an old product against a new product that has been replaced to achieve the potential success of a product. To achieve consistency in product innovation, companies need to devote their time, resources, and efforts to the innovation. To answer this question, the aspect of customer satisfaction must still be considered, to achieve convenience, companies still maintain and need to give their time, resources, and efforts to achieve the success of smartphone companies (Panigrahi et al., 2021). The significant effect of relative advantage on user technology acceptance has been reported by previous studies including (Panigrahi et al., 2021), and Fauzi Muhammad & Mandala (2019), and (Dachi, 2020).

2). Complexity

Fauzi Muhammad & Mandala (2019) states that Complexity is a form of the complexity of a product innovation that makes the innovation unacceptable so that the innovation is difficult to understand and use. How big is the complexity of an innovation to be adopted, it will likely be difficult to understand and use the innovation. Many consumers think that the increase in product loyalty and trust that has been successfully developed comes from the help of complexity (Panigrahi et al., 2021). In terms of the complexity that a product has in understanding usage, slower and innovation will be adopted (Fitriyana Sa'diah, 2017). For example, operating a customer's smartphone takes a lot of time, and learns it with little effort.

3). Compatibility

Fauzi Muhammad & Mandala (2019) states that Compatibility is the level of consistency of customers who already have experience with the value of a product before. This level is considered consistent if it is by the experience and needs that exist in an innovation. Product innovation that is by customer needs will make customers stay in their position to keep buying and feel satisfied. For example, a smartphone fits the needs and lifestyle as well as the customer's past. Compatibility can be

seen through the suitability of using smartphone products on beliefs and lifestyle needs (Fitriyana Sa'diah, 2017). Researchers consistently find that compatibility has a positive effect on users' intentions to use the product (Panigrahi et al., 2021).

4). Trialability

Fauzi Muhammad & Mandala (2019) states that Trialability is the process of adopting an innovation whether the innovation can accelerate the adoption process and can show its superiority through trials or trials on a product. The higher the level of testing carried out by customers, the faster the process of spreading innovation. The trial can increase the purchasing power of customers and feel satisfied because the product is as expected. Before deciding on a purchase commitment, consumers can try innovative offers, evaluate them, and then decide to accept or reject them. Trialability can reduce the perception of risk to consumers who want to buy the product. The guarantee scheme encourages purchasing decisions through trials carried out. Trials like this can encourage a product to be distributed more quickly (Panigrahi et al., 2021). in the statement that has been conveyed, it is clear that trialability plays an important role in innovation.

5). Observability

Fauzi Muhammad & Mandala (2019) states that Observability is the level of results from adopting innovation by users after the innovation is often used and seen, then it can cause the process of adopting innovation to be more easily adopted by many people. The more often innovation is seen, the faster the adoption process is carried out. The accessibility of evaluating innovations about new ideas stimulates peer discussion because they often see friends or neighbors using the innovation. P. Putra & Wulandari (2019) stated that product innovation has a positive effect on customer satisfaction. Offer a product that is (a) tangible, (b) has social visibility, and (c) whose benefits are easily observable will be more easily disseminated than intangible, does not have good visibility, and the benefits take a long time to understand (Panigrahi et al., 2021). Thus, it is expected that

the attributes of product innovation can affect customer satisfaction and brand loyalty.

Customer Satisfaction

Yosephine & Purnama (2020) states that customer satisfaction is defined as a positive emotional reaction after a customer purchases a product or service. This reaction arises because the product that the customer wants to buy is in line with expectations so that the customer is satisfied. Satisfaction makes customers a predictor of future purchases and can increase loyalty by making repeated purchases, and can make customers committed to the products provided by the company. To gain loyalty from customers, the company has an effective way of differentiating company from its competitors (Panigrahi et al., 2021). Customers will be loyal when they are satisfied with the product provided and this means the company will benefit from that loyalty (Yosephine & Purnama, 2020). The study of Supertini et al. (2020) found a positive relationship between customer satisfaction and brand loyalty. Then research conducted by P. Putra & Wulandari (2019) found that customer satisfaction has a positive and significant effect on loyalty.

Smartphone Brand Loyalty

Safitri & Purnamasari (2018) states that brand loyalty is the customer relationship that is measured against a brand. This measure provides an idea of whether or not customers may switch to other brands offered by competitors, especially if there is a change in price or other attributes of a brand. Brand loyalty is the loyalty of customers who make repeat purchases, namely remaining loyal to a brand or service in the future, even though many factors are given by competing companies in marketing efforts that have the potential to make customers switch to other brands (Erianti & Athanasius, 2019). The study of Supertini et al. (2020) found that loyalty has a significant effect on customer satisfaction. From customer commitment, loyalty relates to the main choice to buy (Panigrahi et al., 2021).

Conceptual Framework

Based on previous research on product innovation attributes that have five characteristics, namely, relative advantage-complexity-compatibility-trialability-observability described in the innovation-based satisfaction-loyalty model. Based on the literature review described above, a conceptual framework can be described as shown in Figure 1.



Source: (Panigrahi et al., 2021).

H1: The relative advantage of product innovation has a positive effect on customer satisfaction

H2: Complexity of product innovation has a positive effect on customer satisfaction

H3: Product innovation compatibility has a positive effect on customer satisfaction

H4: Trialability of product innovation affects customer satisfaction

H5: Observability of product innovation has a positive effect on customer satisfaction

H6: Increase in smartphone subscribers leads to increased loyalty

H7: Experience moderating the relationship between customer satisfaction and brand loyalty

The role of experience as a moderator between customer satisfaction and brand loyalty also needs to be considered. In previous research, Yosephine (2020) found that customer experience can increase customer satisfaction and loyalty. Research conducted by Hendra et al. (2017) found that customer experience has a positive effect on loyalty. Then the research conducted by Erianti & Athanasius (2019) also found that experience had a

positive effect on loyalty. It is thus expected to play an important role in research for the relationship of product innovation, customer satisfaction, and brand loyalty.

2. Methods

2.1 Population and Sample

The population in this study are people who use smartphones in the Labuhan Batu Regency area, researchers assume the Labuhan Batu community has a Smartphone. Society expects requirements. The development of researchers applying quantitative research methods, which in this case distributes questionnaires to obtain data from respondents, the questionnaires are compiled into Google forms related to the variables being studied. Then the data were analyzed using SPSS 23. The sample was selected using the incidental sampling technique. determine the sample based on chance, that is, anyone who coincidentally meets the researcher can be used as a sample (Meidatuzzahra, 2019). The sample in this study found 100 respondents. In this case the researcher uses the slovin formula in something. The variables in this study consisted of eight variables including the attributes of product innovation, namely, relative advantage, complexity, compatibility, trialability, observability, customer satisfaction, and brand loyalty, and experience as a moderating variable. Researchers, in this case, use a path analysis approach to determine the relationship between positive and significant.

Slovin's formula to determine the sample is as follows:

Information:

n = Sample size

N = Population size

e = Error tolerance limit (error tolerance)

Based on the explanation above, using the Slovin formula, the sample size can be calculated as follows:

$$n = \frac{493.899}{1 + 493.899(0.10)^2} = \frac{493.899}{4.939} = 99.999,$$

adjusted by the researcher to be 100 respondents

Based on the calculation above, the sample that became the respondent in this study was adjusted to 100 respondents. This is done to simplify data processing and for better test results.

3.1 Instrument Test

The test results of this research instrument can be seen in Table 2 below:

3. Results and Discussion

Table 2. Instrument Test Results

RA Relative Advantage RA1 Comfortable 0.508 RA2 Efficient 0.613 RA3 Effective 0.745 0.813 0.756 RA4 Wide range of functions and services 0.616 0.813 0.756 RA5 Lifestyle 0.542 0.542 0.757 CX Complexity 0.542 0.757 0.757 CX1 It takes effort to use 0.457 0.455 0.755 0.732 CX2 technical skill requirement 0.452 0.755 0.732 0.755 0.732 0.755 0.732 0.755 0.732 0.755 0.732 0.755 0.732 0.745 0.745 0.745 0.745 0.745 0.745 0.745 0.743 0.745 0.743 0.745 0.743 0.745 0.743 0.745 0.743 0.745 0.743 0.745 0.743 0.745 0.743 0.746 0.747 0.747 0.747 0.747 0.747 0.747	Code	Variables and Indicators	Corrected Item – Total Correlation	Cronbach Alpha	AVE
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11/66 1165	BL1	If you can, prefer to move to	0.505	0.766	0.657
another brand		another brand		0.766	0.657

BL2	Choose the current brand	0.520		
BL3	Loyal to the brand	0.644		
BL4	First choice	0.394		
BL5	Brand quality makes loyal	0.399		
BL6	Intending to switch to another brand	0.598		
EP	Experience (moderasi)			
EP1	Usage time	0.524		
EP2	Product knowledge	0.528	0.720	0.650
EP3	Product mastery	0.533	0.739	0.652
EP4	Product use skills	0.543		

Source: Processed Data (2021)

A validity instrument is said to be valid if it has a value greater than 0.30. From Table 2 data, all indicator variables have a validity value above 0.30 so that it is declared valid, as in research Jasmani (2018) the level of instrument validity is good if the validity value is above 0.30. The reliability test can be accepted if it has a value of 0.60 (Sudirman et al., 2020). Based on this information, the reliability value or Cronbach alpha value of all variables in the study meets the requirements, namely, the value is greater than 0.60 so that it is declared reliable. The AVE value generated from all variables is > 0.50. So it can be concluded that based on the AVE value produced, Table 3. Hypothesis test results

all indicators have met the criteria, namely the AVE value > 0.50 (Lesmana et al., 2021).

Hypothesis Test

This study has seven hypotheses that will be tested using path analysis techniques. Path analysis is a development of regression analysis to determine the quality relationship between variables that have been previously determined based on theories and other supporters deemed relevant such as journals of previous studies. To know whether a hypothesis is accepted or not, it must be seen from the CR value or t count > 1.96 and the probability significance value < 0.05. The results of hypothesis testing in this study can be seen in table 3 below;

	Coefficient	SE	t hitung	P- value
	(β)			
Relative advantage -> customer satisfaction	0.239	0.055	4.375	0.000
Complexity -> customer satisfaction	0.267	0.110	-2.425	0.017
Compatibility -> customer satisfaction	0.093	0.046	2.034	0.045
Trialability -> customer satisfaction	0.633	0.077	8.248	0.000
Observability -> customer satisfaction	0.454	0.142	3.205	0.002
Customer satisfaction -> brand loyalty	0.847	0.108	7.813	0.000
Experience (moderation)	0.065	0.007	9.240	0.000

Source: Processed Data (2021)

4. Discussion

The main purpose of this study is to determine the level of customer satisfaction with brand loyalty that can be achieved through the attributes of product innovation. The basic questions of this research are: (a) does product innovation attribute affect customer satisfaction?, (b) does customer satisfaction affect brand loyalty? And (c) does experience moderate between customer satisfaction and brand loyalty?. To answer this question, research has been established based on theoretical evidence from previous research.

The effect of product innovation attributes on customer satisfaction

The purpose of this study was to determine the effect of product innovation attributes on customer satisfaction, namely relative advantage (H1), complexity (H2), compatibility (H3), trialability (H4), and observability (H5), supporting product innovation. This finding confirms that the attributes of product innovation have a significant effect on customer satisfaction, with a P-value <0.05. inline with research conducted by Panigrahi et al. (2021) found that product innovation attributes had a positive and

significant effect on customer satisfaction. The results of this study indicate that the attributes of product innovation have a positive and significant influence on customer satisfaction, thus supporting product innovation.

Customer satisfaction and brand lovalty

In the second hypothesis to determine the effect of customer satisfaction on loyalty using a smartphone brand. The results of this study indicate that the obtained P-value of 0.000 <0.05. These results confirm that the smartphone industry needs to seriously focus on building its brand to compete with its competitors. In line with the research of Diputra & Yasa (2021) which resulted in customer satisfaction having a positive and significant effect on loyalty. This means that the higher the satisfaction, the higher the brand loyalty to smartphone products.

Moderation of the role of experience between customer satisfaction and brand loyalty

The third hypothesis is to investigate the moderating effect of experience between customer satisfaction and loyalty. The results of this study indicate that the P-value 0.000 <0.05. This means that experience has a significant effect on strengthening customer satisfaction and brand loyalty. In line with D. Putra et al. (2015) in their research which resulted in experience as moderating consumer attitudes towards purchasing a product. The results of testing this hypothesis indicate that experience is a moderating variable that increases consumer attitudes towards product purchasing decisions and makes consumers loyal to a brand.

Conclusion and Suggestions

From the results and discussion, a study to investigate the effect of product innovation on customer satisfaction proves that hypothesis testing confirms the relative advantage and trialability of product innovation attributes are key factors that influence product innovation on customer satisfaction. Based on a sample of 100 people in the Labuhan Batu Regency area who use smartphones, through a path analysis approach the five attributes of product innovation, namely, Relative Advantage, Complexity, Compatibility, Trialability, and Observability have a positive and significant effect on customer satisfaction. The results showed that the product innovation attribute is the main factor of customer satisfaction. In addition, the research also shows that customer satisfaction significantly affects brand loyalty. Suggestions from researches to understand customer needs by making innovations in a product that is more innovative, and can produce good, and quality products. This is to build a long-term

relationship between the company, and smartphone customers. This study examines experience as a moderation between costumer satisfaction, and brand loyalty. Thus, it is hoped that further research can analyze the role of experience as an independent variable in influencing customer satisfaction, and brand loyalty.

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